DOCUMENT RESUME

ED 427 682 IR 019 233

AUTHOR Abraham, Thomas
TITLE The Interactive, Virtual Management Information Systems (MIS) Classroom: Creating an Active Learning Environment on the Internet.
PUB DATE 1998-11-00
NOTE 7p.; In: WebNet 98 World Conference of the WWW, Internet, and Intranet Proceedings (3rd, Orlando, FL, November 7-12, 1998); see IR 019 231.
PUB TYPE Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Active Learning; Assignments; Business Administration Education; Comparative Analysis; *Computer Assisted Instruction; Computer Mediated Communication; Conventional Instruction; Cooperative Learning; Higher Education; Information Technology; *Instructional Design; Instructional Effectiveness; Instructional Materials; Interaction; Management Information Systems; Teaching Methods; *World Wide Web
IDENTIFIERS Kean College of New Jersey; *Learning Environments; *Virtual Classrooms

ABSTRACT

This paper describes the creation of an active learning environment within an Internet-based course in the School of Business, Government and Technology at Kean University (New Jersey). The introductory Management Information Systems (MIS) course is an elective that has become increasingly popular with junior and senior business majors. The main objective of this class is to provide an overview of the field of information systems and to strengthen some of the computer skills developed in earlier, required classes. In the spring of 1998, one section of the course was taught as a partially Internet-based class. The challenge was to apply active learning strategies and other effective classroom practices to the virtual classroom. Course materials, posted on the World Wide Web, were designed to be interactive. E-mail was used extensively to promote discussion, participation, and feedback. Students conducted Webquests to facilitate individual assignments and a cooperative group assignment. They then created their own Web pages to present the results of the Webquest to the rest of the class. Students in this experimental section performed slightly better on the first test than students from another section taught in a conventional classroom setting. (Author/AEF)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 427 682

THE INTERACTIVE, VIRTUAL MANAGEMENT INFORMATION SYSTEMS (MIS) CLASSROOM: CREATING AN ACTIVE LEARNING ENVIRONMENT ON THE INTERNET

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Thomas Abraham, Ph.D.,

Management Science Department

School of Business, Government & Technology

Kean University

USA

tabraham@turbo.kean.edu or thos60@AOL.COM

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
G.H. Marks
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"

ABSTRACT: This proposal describes the methods I am using to try to create an active learning environment within an Internet-based course. The introductory Management Information Systems (MIS) course is an elective that has become increasingly popular with our junior and senior Business majors. The main objective of this class is to provide an overview of the field of information systems and also to strengthen some of the computer skills developed in earlier, required classes. This spring (Spring '98) I am teaching one section of the course as a partially Internet-based class. The challenge is to apply active learning strategies and other effective classroom practices to the virtual classroom. Course materials, which are posted on the World Wide Web (WWW), are designed to be interactive. We use E-mail extensively to promote discussion, participation and feedback. Students conduct Webquests to facilitate individual assignments and a cooperative group assignment. They then create their own Web pages to present the results of the Webquest to the rest of the class. It is too early to evaluate the effectiveness of these methods. However, in the first test, students in this section performed slightly better than students from another section taught in a conventional classroom setting. By making use of widely available software tools, the teaching methods I have developed are readily transferable.

LITERATURE REVIEW

Research from learning theorists demonstrates that the "empty vessel" approach to learning is simply not very effective. This approach views students as empty vessels to be filled with knowledge by passively listening to those founts of wisdom, the instructors. Meyers and Jones [Meyers & Jones1993] cite studies that found that students retain only 20% of the information provided during the last 10 minutes of a lecture. They also state that students are not paying attention to the lecture 40% of the time, and, most disturbing of all, that 4 months after taking a course students knew only 8% more than a control group that never took the course.

The active learning approach appears to provide a more effective learning strategy. This concept is not

IR019233

BEST COPY AVAILABLE

restricted to educational institutions. Most corporations "re-engineered" their businesses by empowering their employees. Similarly, students become the "architects of their own learning" [Verity 1994] [Graham 1992]. The underpinning of this approach is experiential learning theory. According to this theory [Kolb 1984], there are four learning styles that people use. These are the convergent, divergent, assimilative, and accommodative styles. The theory has many implications for business schools. First, our student bodies are increasingly diverse and their learning styles are very likely to be proportionately diverse since age, gender, and cultural factors often affect the learning styles used. It would appear that, to effectively meet their needs, these students must be offered more than one learning method. Second, if a key objective of education is to produce well-rounded, fully developed individuals, it is important to help students become integrated learners. Third, the marketplace demands creative and adaptive employees and this appears to also require an integrated learning style.

A large number of practical tools and strategies are being developed to create an environment where students can use more than one learning style and can actively pursue knowledge rather than passively receive it. Meyers and Jones [Meyers & Jones1993] describe the structure of active learning as being composed of elements, learning strategies, and teaching resources. The key elements are talking and listening, writing, reading, and reflecting. Students do not passively receive knowledge but must actively construct their own frameworks. Each student has a preferred learning style that involves using some combination of reflection, talking, listening, reading, and writing that works together to add to and refine his or her knowledge structures. Active learning strategies attempt to provide an environment in which students have some flexibility to direct their own knowledge acquisition and can combine more than one learning element to suit their learning style. Learning strategies include small groups, cooperative work, case studies, simulations, discussion teaching, problem solving, and journal writing. Teaching resources include readings, homework assignments, outside speakers, teaching technology, and television.

Other educators have applied technology to support feedback. Strasser [Strasser1993] discusses the use of E-mail to improve communication between student and instructor. Love and McKean [Love & McKean 1993] describe a real-time student feedback system where students can request a number of actions from the instructor. These actions include speaking faster or slower, using less technical language or summarizing, and so on. Students record their requests by pressing a particular key. The Internet has created new opportunities for extending the classroom. Web-based classes and other distance learning approaches offer many benefits. Bernie Dodge [Dodge1998] describes the use of WebQuests. A WebQuest is an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet.

The content of the MIS core course typically involves introducing students to information technology, business applications, information ethics and computer security. I had introduced an active learning component into the MIS course. My approach [Abraham 1995] applies the learning strategies of small groups and cooperative work to the core MIS course. It also introduces timely feedback, a key principle of Total Quality Management (TQM), into the course. I facilitated these strategies by using the teaching technologies of groupware and presentation software. Now I am teaching a section of MIS as an Internet-based class. In the rest of this proposal, I describe my attempts to port the active learning environment to the virtual classroom.

DISCUSSION OF THE APPROACH

There are two main aspects to the approach I adopted. One is to create a virtual classroom. Students should have more flexibility as to when and where they learn. This is particularly useful for students who work part-time, which includes most of our student body. It is also an opportunity for most Colleges and Universities to leverage their existing infrastructure. The World Wide Web (WWW) now makes it possible for most course materials, including lectures, to be made available to students wherever and whenever they choose to learn.

The second aspect of my approach is interactivity - an active learning environment in which students interact with the materials and direct their own learning. As some of the research discussed in the earlier section

indicates, active learning improves the quality of the learning experience. The Web once again proves to be a valuable tool in providing an interactive environment. Links to related Web pages allow students to follow a path of their choice. JavaScript and other programming tools make it possible to transform Web pages into dynamic, interactive learning tools. E-mail provides students with a means to communicate with the instructor and with classmates in an asynchronous mode.

The introductory MIS course has traditionally provided undergraduate business students with an overview of management information systems. Students are introduced to information technology (IT) and its application to business. In addition students are also expected to acquire some computer skills. I have broken down the course into eight learning units. These are (i) Introduction to MIS (ii) Hardware (iii) Software (iv) Managing Data (v) Business Applications of IT (vi) Telecommunications & Networks (vii) Internet and (viii) Social Impacts of IT. I also expect students to learn to use a graphics package such as PowerPoint or Presentations, become very comfortable surfing the Web, use an E-mail package such as Pine, use a file transfer package such as Rapid Filer or WS-FTP, and learn to create their own Web pages. My course outline is posted on the Web at the start of each semester. It provides a detailed description of the course objectives, student obligations, class schedule and grading scheme.

The learning units are now being published as Web documents. A central switchboard allows students to choose a specific unit. Each unit has a main page containing links to other related materials. This main page typically contains the learning objectives of the unit, a link to lecture notes, links to articles on major figures (such as Larry Ellison or Andrew Grove) and major companies in the area of discussion, historical trends, review questions, class exercises and a sample quiz. The lecture notes were constructed using Microsoft's PowerPoint (Office 97) to create a set of slides and publish them in HTML. The software automatically creates an interactive set of frames that allow students to either view the slides (in any order) or print out the notes in outline form. JavaScript is automatically generated for this purpose.

Students E-mail me at the start of the semester. I take their addresses from these messages and create a class E-mail list. This allows me to reach all the students when I need to make any announcements or pose questions or respond to them. Also, students are encouraged to carbon copy that list when they send in comments and suggestions. The first individual class assignment requires students to learn to use a graphics package such as PowerPoint (Microsoft) or Presentations (Corel).. They then construct a series of slides or charts using the software. In addition to learning a useful skill, this exercise also plays a part in integrating other assignments such as the cooperative student project discussed below. Teams presenting their project now have an impressive visual aid to help enhance the experience.

Students create a similar presentation of their own and hand in either a printed copy of the charts or attach an electronic copy to E-mail. They usually get about 10% of their overall grade for completing this assignment. Every chart of each student must be unique - this results in very creative, and occasionally disturbing, output! After successfully completing this assignment, most students become comfortable with the software

Teams of two to three students are formed early in the semester to carry out a cooperative student project. The project consists of researching a specific area of MIS and presenting the research findings or the system developed to the rest of the class. In the process of carrying out this assignment, I believe that students learn a lot about MIS, acquire new computer skills, and improve their communication, creativity, learning, and group skills.

Teams select a topic of their own choice. They could analyze an existing information system, design and/or develop a new system, compare various software packages or hardware devices, or research a topical area. The objective here is to promote self-directed learning and creative choices. Next, each member of the team conducts a WebQuest to research the topic. The final stage of the project involves presenting the project to the class. Despite the discomfort that presentations cause, they are an important pedagogical tool and learning experience. The sharing of experiences among students can also be a very effective means of learning. As noted earlier, talking and listening are two of the basic elements of active learning. Students can improve their communication skills by watching and participating in these presentations. Graphics packages like PowerPoint help students make professional presentations. Starting around mid-semester, teams of students present their term projects to the rest of the class.

As discussed earlier a WebQuest is an inquiry conducted on the Internet. Each member of a team conducts a longer-term WebQuest [Dodge 1998] to research some part of the topic chosen by the team. They surf the Web looking for interesting Web sites and identify at least 3 URLs that provide relevant material for their topic. Each member of the team creates a Web page containing a summary of the materials they found on the WebQuest. They insert links to interesting sites that they found. Each Web page is analogous to a poster in a poster session [Drummond 1998].

There are a few procedures I use to help manage the approach effectively. I make sure the students know what to expect by providing them (on the Web) with a detailed course outline. This outline clearly describes the objectives of the course, grading policies, classroom procedures, and a tentative class schedule. It fulfills the requirements specified by active learning theorists [Meyers & Jones 1993]. I allow students to join any group. However, to provide some control over the group processes, if the majority of a group complains about any member, that person must complete the project individually. Students recognize that their success depends partly on maintaining a good working relationship with their teammates.

Generating ideas for the project is a crucial step. In the past, this step often ran into a number of difficulties. Some teams would wait till the last possible moment and pick a topic randomly from the textbook. Most teams would generate only one or two topic choices. In fact, a number of teams would pick the same topic, usually something that was discussed recently in class. I have attempted to improve this process by spreading the presentations over the second half of the semester and assigning chapters to each team. Topic selection must be guided by certain criteria. The criteria include relevance, usefulness, audience interest, and feasibility. The topic must be relevant to the course, must be useful to the team members, should be of interest to the rest of the class, and should be feasible in terms of resources. If more than one team picks a topic, there must be other choices to pick from. It is often useful to stress that topics should be connected to their own interests, both personal and professional [Shack 1993]. Once the topic is selected, the instructor should approve it and monitor the teams' progress. As with any group project, I have encountered problems such as procrastination and loafing.

I insist that graphics software be used in the presentations. The presentations are usually about ten to fifteen minutes long and attendance is compulsory. The rest of the class is expected to take notes on each presentation since they are included as material for the final exam. The teams must also turn in a one-page summary or outline of their presentation.

I created the main page for each learning unit using Word for Windows 95, a word processor built into Microsoft Office 97. I published the document in HTML format to generate the Web page. I edited the resulting document in Word Pad, a simple word processor built into Windows 95. I used my rudimentary knowledge of HTML and a couple of templates downloaded off the web to get the look I wanted. To create the lecture notes, I selected some slides from the textbook support materials. I used PowerPoint to add additional slides or modify existing ones. I then published the presentation in HTML format. This is a very nice feature in recent versions of the software. PowerPoint automatically creates a four-frame page for viewing the presentation. One frame presents the slides in GIF or JPEG formats. A second frame provides an outline of the presentations. A third frame provides a navigation toolbar for the images. The fourth frame has two buttons - clicking on one presents a detailed outline in frame two and clicking on the other present a summary outline. I recommend that students print just the outline of the lecture instead of the whole page. I modified the index button on the navigation bar to point back to the main page of the learning unit. Finally, I used WS_FTP95, a freeware file transfer program to upload all the html documents to the Web server. I also used a program called Rapid Filer on occasion. Rapid Filer is built into the NetWare operating system and can be used from any NetWare workstation.

RESULTS

As with most instructional approaches, it is difficult to precisely measure the effectiveness of my method. To conduct a scientific experiment, I would have to have a control group which would be excluded from using this

teaching approach. For ethical and practical reasons, this was not possible.. In the first test, I found that students from this section scored somewhat better than their counterparts in a regular classroom section. I find that students are more enthusiastic about the course, make better presentations, and occasionally make helpful suggestions that improve the class. By exposing students to a variety of learning strategies, this approach allows a diverse student body alternative paths to knowledge acquisition while promoting a more integrated learning style. Finally, the tools themselves update the traditional skills component of the MIS class by replacing spreadsheets and word processing with graphics and Web page design.

Students have consistently rated the term project and computer labs as being the most useful and enjoyable parts of the course. They have used presentation software in other courses and pressured other faculty to use the multi-media rooms. After they become comfortable with web-browsers and E-mail, students will often stay on after the class to complete a session. This is in stark contrast to their behavior at the end of a lecture!

A few aggressive or better-informed students tend to dominate class participation in the traditional classroom. By promoting E-mail as a means to participate, I have found that students, who would otherwise be silent, begin to participate enthusiastically. Information sharing improves too. For instance, one student recently sent me mail asking me for help on how to buy a PC. I forwarded this to the rest of the class and soon she received four or five very useful suggestions on where to shop and how much to pay.

Feedback is a critical component of any quality initiative [Thomson 1993]. Feedback from students, however, is unfortunately usually overlooked. Student evaluations are usually collected at the end of the semester when there is little motivation to make suggestions. Very often, the time provided for filling out the forms is limited. Our method uses E-mail to collect feedback from students in the middle of the semester when their suggestions can still be implemented. Feedback to the students is also speeded up. Often, I can post grades on the Web within a few hours after the test or quiz.

Cooperative student projects improve social skills and prepare students for the real world [Bruffee 1987] [Meyers & Jones 1993] [McKinney 1993]. Our students have been exposed to team projects in a number of courses and are increasingly comfortable with the format. Once they understand that they can "fire" a team member for not contributing they feel more in control. These procedures also tend to keep potential free riders in line.

There are a few drawbacks and caveats to using this method. First, obtaining multimedia rooms and computer labs are not always feasible. Perhaps, one day, every classroom will have a computer and screen instead of an overhead projector and every student will carry his or her own laptop. A short-term solution could be for the multi-media center to provide a mobile setup on request much as they now deliver TVs and VCRs. At our school, all the classrooms have sockets that allow one to plug into the Internet. Computers that attach to overhead projectors are also available and seem to offer an attractive alternative. Second, as with any technology, the potential for breakdowns exists. We have all occasionally been in situations where the projector didn't work properly or the whole system went down. Web servers can crash, FTP programs can stop transfering files and some browsers may not support certain features. Third, some students are still uncomfortable with computers and may not have easy access to the Internet. Fourth, some students get so caught up in trying to make dazzling charts and web pages, they err excessively on the side of style over substance. Fifth, this approach can be very time-consuming. Preparing the course materials took a great deal of time. Monitoring the E-mail and downloading files was also very labor-intensive.

Colleges and Universities are looking to the Internet as an opportunity to expand their course offerings while maintaining the same infrastructure (faculty, buildings, labs, etc). This paper described an approach used to adopt an active learning environment within an Internet-based course. I described how I used the Web, E_mail and graphics software to support a cooperative student project in the core MIS course. Information Technology itself is a key topic in the course and so it is naturally a very appropriate medium for instruction. Students learn about information technology by using computers and accessing information through the Internet. Preliminary results seem to indicate that students are enthusiastic about using a 'high-tech' approach to learning, especially if it is grounded in active learning methods.

REFERENCES

[Abraham 1995] Abraham, T. (1995). The Interactive and Integrated MIS Classroom: Using Presentation and Group Support Software to Create an Active Learning Environment. *Journal of Information Systems Education*, 1(7), 144-147.

[Bruffee 1987] Bruffee, K. (1987). The Art of Collaborative Learning. *Change, March-April*, 42-47.

[Dodge 1998] Dodge, B. Some Thoughts About WebQuests. [Online] Available http://edweb.sdsu.edu/courses/edtec596/about_webquests.html, downloaded on January 13, 1998.

[Drummond 1998] Drummond, T. A Brief Summary of the Best Practices in College Teaching. [Online] Available http://nsccux.sccd.ctc.edu/~eceprog/bstprac.html, downloaded on January 13, 1998.

[Eng 1994] Eng, P.M. (1994). High-Tech Teaching, Higher Test Scores. *Business Week*, February 28, 86.

[Graham 1992] Graham, E. (1992). Digging for Knowledge. *The Wall Street Journal*, September 11, B1,B4.

[Johnson & Johnson 1990] Johnson, D., Johnson, R. & Johnson Holubec, E. (1990). *Circles of Learning* (3rd ed.). Edina, Minnesota: Interaction Book Company.

[Kolb 1984] Kolb, D.A. (1984). *Experiential Learning: Experience as The Source of Learning and Development*.Englewood Cliffs, NJ: Prentice-Hall Inc.

[Love & McKean 1993] Love, D. & McKean,G.W. (1993, November). Electronic Town Hall Meets the Classroom: Real Time Student Feedback. *Proceedings of the 1993 Annual Meeting Decision Sciences Institute*, Washington, D.C., 293-295.

[Mauer & Guthenberg 1992] Mauer, L. & Guthenberg, M. (1992, June 14-17). Total Quality Management in Education: A Case Study, (Presented at the *QUIS3 Conference, Karlstad, Sweden.*), Unpublished Document.

[McKinney 1993] McKinney, E.H. (1993, November). The Management Capstone Course: Strategy, Marketing, and MIS in the One School Roomhouse, Instructional Innovation Award Finalist, *Proceedings of the 1993 Annual Meeting Decision Sciences Institute*, Washington, D.C., 1-1.

[Meyers & Jones 1993] Meyers, C. & Jones T.B. (1993). *Promoting Active Learning: Strategies for the College Classroom*. San Francisco, CA: Jossey-Bass Inc.

[Schack 1993] Schack, G.D. (1993, April). Involving Students in Authentic Research, *Educational Leadership*, 29-31.

[Strasser 1993] Strasser, S.E. (1993, November). E-Mail Minutes: In Answer to the One-Minute Paper, *Proceedings of the 1993 Annual Meeting Decision Sciences Institute*, Washington, D.C., 290-292.

[Thomson 1993] Thomson, N.S. (1993, November). TQM Weds MIS, Instructional Innovation Award Finalist, *Proceedings of the 1993 Annual Meeting Decision Sciences Institute*, Washington, D.C., 1-1.

[Trauth & Farwell 1993] Trauth, E.M., Farwell D.W. & Lee D. (1993, September). The IS Expectation Gap: Industry Expectations Versus Academic Preparation, *MIS Quarterly*, 3, 293-303.

[Verity 1994] Verity, J.W. (1994, February). The Next Step: Reengineer the Classroom, *Business Week*, 88.